Lucent Technologies
Bell Labs Innovations

CellPipe™ 20 Series

User's Guide

Notice

Every effort was made to ensure that the information in this document was complete and accurate at the time of printing, but information is subject to change.

European Community (EC) RTTE Compliance

Hereby, Lucent Technologies, declares that the equipment documented in this publication is in compliance with the essential requirements and other relevant provisions of the Radio and Telecommunications Technical Equipment (RTTE) Directive 1999/5/EC.

To view the official *Declaration of Conformity* certificate for this equipment, according to EN 45014, access the Lucent INS online documentation library at http://www.lucent.com/ins/doclibrary/.

Safety, Compliance, and Warranty Information

Before handling any Lucent Access Networks hardware product, read the *Edge Access Safety and Compliance Guide* included in your product package. See that guide also to determine how products comply with the electromagnetic interference (EMI) and network compatibility requirements of your country. See the warranty card included in your product package for the limited warranty that Lucent Technologies provides for its products.

Security Statement

In rare instances, unauthorized individuals make connections to the telecommunications network through the use of access features.

Ordering Information

You can order the most up-to-date product information and computer-based training online at http://www.lucent.com/ins/bookstore.

Feedback

Lucent Technologies appreciates customer comments about this manual. Please send them to techcomm@lucent.com.

Lucent Technologies

Customer Service

Product and service information, and software upgrades, are available 24 hours a day. Technical assistance options accommodate varying levels of urgency.

Finding information and software

To obtain software upgrades, release notes, and addenda for these products, log in to Lucent OnLine Customer Support at `http://www.lucent.com/support`.

Lucent OnLine Customer Support also provides technical information, product information, and descriptions of available services. The center is open 24 hours a day, seven days a week. Log in and select a service.

Obtaining technical assistance

Lucent OnLine Customer Support at `http://www.lucent.com/support` provides easy access to technical support. You can obtain technical assistance through email or the Internet, or by telephone. If you need assistance, make sure that you have the following information available:

- Active service or maintenance contract number, entitlement ID, or site ID
- Product name, model, and serial number
- Software version or release number
- Software and hardware options
- If supplied by your carrier, service profile identifiers (SPIDs) associated with your line
- Your local telephone company's switch type and operating mode, such as AT&T 5ESS Custom or Northern Telecom National ISDN-1
- Whether you are routing or bridging with your Lucent product
- Type of computer you are using
- Description of the problem

Obtaining assistance through email or the Internet

If your services agreement allows, you can communicate directly with a technical engineer through Email Technical Support or a Live Chat. Select one of these sites when you log in to `http://www.lucent.com/support`.

Calling the technical assistance center (TAC)

If you cannot find an answer through the tools and information of Lucent OnLine Customer Support or if you have a very urgent need, contact TAC. Access Lucent OnLine Customer Support at `http://www.lucent.com/support` and click `Contact Us` for a list of telephone numbers inside and outside the United States.

Alternatively, call 1-866-LUCENT8 (1-866-582-3688) from any location in North America for a menu of Lucent services. Or call +1 510-769-6001 for an operator. If you do not have an active services agreement or contract, you will be charged for time and materials.

Contents

Introduction

1

About this guide

This document is a combined user's guide for the CellPipe™ 20 Series Product Family. The products currently addressed by this guide include the following:

- CellPipe 20A-GX, supporting software version 1.65LU
- CellPipe 20S, supporting software version 1.51LU

The contents of this guide include basic information about the aforementioned units, such as standard features, setup instructions, and information on how to configure and administer the units. This guide is written primarily to provide information for network administrators responsible for configuring and administering the units and secondarily to acquaint users with the functionalities of the units.

For additional support, you can also visit the Lucent OnLine Customer Support at `http://www.lucent.com/support` to download software upgrades and the most current release notes for this product family.

What is the CellPipe 20 Series Product Family?

The current CellPipe 20 Series Product Family consists of two groups of products—symmetrical digital subscriber line (SDSL) and asymmetrical digital subscriber line (ADSL)—for Point-to-Point Protocol (PPP) or Frame Relay over asynchronous transfer mode (ATM). All units support IP bridging and routing.

See Table 1-1 for a summary of the features for each product.

Table 1-1. CellPipe 20 Series products

CellPipe units	Description
CellPipe 20A-GX	Support for: • ADSL Annex A mode operation • G.Lite interface • DMT line code • IP routing and bridging, PPP support • Asymmetrical transmission with downstream rates of 64Kbps to 8Mbps and upstream rates of 64Kbps to 1Mbps • One 10BaseT Ethernet port • Eight PVCs in bridging mode • Five PVCs in routing mode
CellPipe 20S	Support for: • SDSL transmission • IP routing and bridging, PPP support • 2B1Q line code • Symmetrical transmission rates in the range of 144Kbps to 2.32Mbps • Integrated four-port 10BaseT Ethernet hub • Eight PVCs in bridging mode • Five PVCs in routing mode

Lucent TURN-UP

The CellPipe 20 Series Product Family supports the Lucent TURN-UP™ automated CPE provisioning system. TURN-Up is enabled when a user powers up his unit and allows service providers to quickly and efficiently distribute and provision CPE gear without the use of truck-rolls. Furthermore, TURN-UP stores configuration information on a central server, making configuration management efficient and easy.

⚠ **Caution:** If you attempt to manually configure the unit, TURN-UP will be disabled. To re-enable TURN-UP, you need to select the `default` command and reinstall the factory default configuration.

CellPipe 20 Series management

CellPipe 20 Series units can be managed via three different connections:

- Console port
- Ethernet port
- WAN port

CellPipe 20 series units are managed through a command-line interface (CLI). Also, rudimentary management can be accomplished with SNMP. You set up a connection between your computer and the device and use VT100 emulation software to display and change configuration information. See Chapter 3, "Command-Line Interface," for a description of all the commands in the command-line interface.

Setup

2

Prior to setting up your unit, verify the contents of the package for your unit against the package-contents list provided in this chapter. After determining the contents are complete, connect the cables, verify all status lights are operating properly, and establish a serial connection from you computer to the unit.

Verifying package contents

Verify the contents of the CellPipe 20 Series package you receive.

The CellPipe 20 Series package contains the following items:

- CellPipe unit
- 10BaseT Ethernet cable (yellow)
- WAN cable with RJ11 connector (blue)

- Power supply
- Warranty card

Note: All CellPipe units are shipped with a power supply. However, European users need to purchase an additional wall-outlet cable because of regional variations in wall outlets. Please check with your sales representative for the item specific to your unit.

Figure 2-1. Power supplies
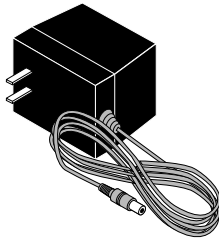
U.S., Asia, Australia
power supply
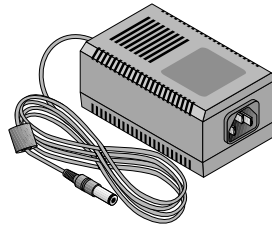
European
power supply

Items you need for installation

In addition to the items provided with your CellPipe unit, you will also need the following item:

- An ethernet network interface card (NIC) for your PC

Connecting CellPipe 20 Series products

Figure 2-2 on page 2-3 shows the rear panel for each model. There are many similarities between the units and the procedure for connecting the units are quite similar as well.

Figure 2-2. CellPipe 20 Series rear panels

CellPipe 20A-GX
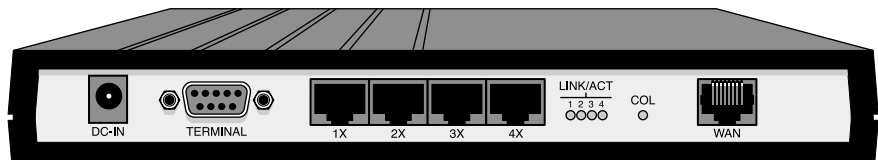
CellPipe 20S

To connect up the CellPipe 20 Series units, proceed as follows:

1   LAN connections:

   •   On the CellPipe 20A-GX, use the provided Ethernet cable (yellow) to connect the ETHERNET port to the NIC on a computer or to an appropriate networking component.

   •   On the CellPipe 20S, use the provided Ethernet cables to connect the four LAN ports (1X, 2X, 3X, 4X) to NICs on computers or to appropriate networking components.

2   WAN connections:

   •   Use the blue WAN cable to connect the WAN port to a wall xDSL connector set up by your service provider.

3   Connect the power cable and power up the unit.

Note: Apply power last. Doing so turns on the unit, which does not have a power switch.

Checking status lights

Observe the activity pattern of the lights at the front of the CellPipe units to verify that they are connected properly.

Figure 2-3. Status lights
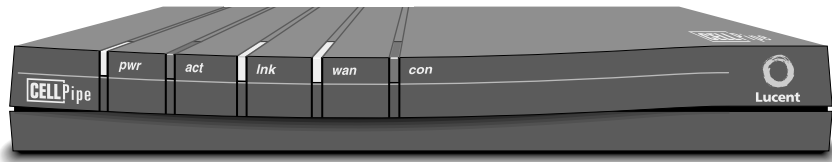
When all the cables are connected, verify that:

• The pwr light comes on initially and remains on. If not on, make sure the power supply is properly connected.

• The act light blinks during any LAN traffic. Otherwise it remains off.

• The lnk light is on if there is an Ethernet connection established. If not on, check to make sure your Ethernet cable is properly connected.

• The wan light blinks until a connection is established and then it remains on.

• The con light is on only during the unit self-test.

Console setup

You need to set up a serial connection between the unit and your computer to access the command-line interface and configure a CellPipe 20 Series unit.

You need a 9-pin RS-232 serial cable to connect to the CellPipe unit through the console port.

You also need a terminal emulation program, such as HyperTerminal, PROCOMM PLUS, Zterm, or any other program that supports VT100 terminal emulation, to open a session directly with the unit.

Set your communications software to connect with the following settings:

- Connection—Specify a direct connection from the unit to the computer.
- Serial port—Specify the serial port on the computer the software is to use.
- Terminal type—Specify VT100.
- Duplex—Specify Full. This is the default for most communications software.
- Bits per second—Specify 9600.
- Data bits—Specify 8.
- Parity—Specify None.
- Stop bits—Specify 1.
- Flow control—Specify None.

A >> prompt appears when the connection is completed.

Command-Line Interface

3

CellPipe 20 Series units are managed through a command-line interface (CLI). You set up a connection between your computer and the unit and use VT100 emulation software to display configuration information on your computer and input commands and parameter values to configure and manage the unit.

Syntax of command-line interface

Syntax for the CLI is as follows:

- >> prompt means commands can be entered without password
- < > means the parameters are compulsory
- [ ] means the parameters are optional
- | between parameters means either/or
- "..." around parameters means the enclosed are key words
- A "space" is necessary between a command and its corresponding parameter

Using the commands

The CLI of the CellPipe 20 Series consists of two hierarchical levels. Some of the second-level commands display values or status of the selected commands from the main level.

Note: Access to the CLI is possible without a password. When user enables a password, the unit will time-out after 10 minutes if there is no activity on the unit. Re-entering password is necessary to resume activity.

The CellPipe 20 Series units display two sets of main menu commands based on the mode of operation—bridging or routing. The default list of main menu commands is for bridging. See "Bridging commands" on page 3-3. When selected for routing, the routing menus are displayed. See "Routing commands" on page 3-6.

Viewing the main menu

To view a list of the main menu commands, enter help at the >> prompt.

>> **help**

Displaying information about a command

To display information about a command, enter help followed by the name of the command.

For example, in the LAN menu, you can display information about the setip command as follows:

```
>lan> help setip

setip        - setip <etherip[/<masknum>]> [subnet mask]
```

where *etherip* is the required information and [*masknum*] and [*subnet mask*] are optional information.

Returning to the main menu

To return to the main commands, enter the home command:

```
>lan> home
```

Displaying second-level commands

To select a second-level command, enter the command at the > prompt:

```
>adsl> show
```

Saving configurations

To save a value or configuration, enter the save command and type y:

```
>> save
Are you sure that you want to save the new changes?(y/n)y
```

Note: All settings have to be saved to take effect.

Bridging commands

The default main menu list of commands is for bridging. To display a list of bridging commands, enter the help command.

```
>> help
```

The following main menu commands are displayed for bridging mode:

```
xdsl*    - entry to xdsl menu
default  - set all configuration to factory setting
lan      - entry to Ethernet
list     - list status for enabled PVC
manage   - entry to management menu
mode     - exit this menu and change modem mode
ping     - ping IP for testing purpose
quick    - quick setup
r1483    - entry to RFC 1483 menu
restart  - reboot modem
```

```
save       - save and restart modem
show       - display configuration of PVC and Ethernet
ver        - display software version
```

Note: *The WAN interface displayed in the menu is dependent on the interface supported by your unit. This *generic* form of presentation has been arrived at to eliminate the need of representing every interface.

Table 3-1 lists the main menu commands and their corresponding second-level menus. The different WAN interfaces and their corresponding menus are presented in sequence. Select the interface and menus appropriate to your unit.

Table 3-1. Main menu and second-level bridging commands

Main menu	Second-level menus/description
adsl	abort - abort ADSL line
	bitdn - ADSL downstream bit loading value
	bitup - ADSL upstream bit loading value
	coding - <0>|<1>|<2>|<3>|<4>|<5>|<6>|<Auto> dB - coding gain
	counts - display ADSL counters
	default - reset to default ADSL setting
	ec_fdm - <Ec>|<Fdm> - set EC or FDM mode
	rx_bin - <start_bin> <end_bin>
	show - display ADSL parameter configuration
	startup - restart ADSL line
	status - display ADSL line status
	stnl - <T1.413>|<g.Lite>|<g.Dmt>|<Multi Mode>
	trellis - <Enable>|<Disable> - Trellis encoding
	tx_pwr - <0> .. <12> dB - Tx power attenuation
	tx_bin - <start_bin> <end_bin>

Table 3-1. Main menu and second-level bridging commands (continued)

Main menu	Second-level menus/description
sdsl	auto - <Enable>|<Fast>|<Scan>|<Disable>
	cell - <Enable>|<Disable> idle-cell header
	dbit - configure the SDSL data bit as normal or reverse polarity
	default - set SDSL configuration back to factory setting
	enable - activate the last updated SDSL parameters
	maxrate - configure the SDSL autobuad max rate
	rate - manually configure the SDSL line rate
	scramble - <Enable>|<Disable> payload scrambling
	smbit - configure sign/magnitude bit sequence
	status - display the configuration and status of current SDSL setting
	terminal - configure modem to COE or CPE mode
default	set all configuration to factory setting
lan	fullduplex - fullduplex <Disable>|<Enable>
	setip - setup the IP address, and subnet mask for Ethernet connection
	show - show LAN configuration
list	list status for enabled PVC
manage	setpass - change password
mode	please select bridge or router:(b/r,b)
ping	ping IP
quick (for adsl)	R1483(r)/ IPoA(i)/ PPPoA(p)
quick (for sdsl)	configure VPI/VCI

Table 3-1. Main menu and second-level bridging commands (continued)

Main menu	Second-level menus/description
r1483 (for adsl)	delpvc - delete VPI and VCI pfilter - set packet filter type setpvc - set VPI and VCI for bridge mode setqos - set class setspan - <Enable>|<Disable> spanning tree show - show RFC1483 configuration
r1483 (for sdsl)	delwanip - delete VPI and VCI setqos - set class setwanip - set PVC and Wan IP for routing mode show - show RFC1483 configuration
restart	reboot modem
save	save and restart modem
show	display configuration of PVC and Ethernet
ver	display software version

Routing commands

You have to preselect for routing mode to have the routing commands display.

To select for routing, enter the mode command and then enter r to select routing.

>>**mode**

Please select bridge or router:(b/r,b)**r**

The following main menu commands are displayed for routing mode:

```
xdsl*     - entry to xdsl menu
default   - set all configuration to factory setting
dnsrelay  - entry to DNS Relay menu
ipoa      - entry to IPoA menu
lan       - entry to Ethernet
list      - list status for enabled PVC
manage    - entry to management menu
mode      - exit this menu and change modem mode
pat       - entry to PAT menu
ping      - ping IP for testing purpose
pppoa     - entry to PPPoA menu
quick     - quick setup
r1483     - entry to RFC 1483 menu
restart   - reboot modem
rtable    - entry to Routing Table menu
save      - save and restart modem
show      - display configuration of PVC and Ethernet
ver       - display software version
```

Note: *The WAN interface displayed in the menu is dependent on the interface supported by your unit. This *generic* form of presentation has been arrived at to eliminate the need of representing every interface.

Most of the routing commands are similar to those under bridging mode. Table 3-2 lists only the additional routing commands and their corresponding second-level menus that appear when routing is selected.

Table 3-2. Additional main-menu and second-level routing commands

Main menu	Second-level menus/description
dnsrelay	setdnsip - set DNS server IP show - show DNS Relay configuration

Table 3-2. Additional main-menu and second-level routing commands (continued)

Main menu	Second-level menus/description	
`ipoa`	delwanip	- delete IPoA PVC
	setqos	- set class
	setrip	- set IPoA PVC
	setwanip	- set IPoA PVC
	show	- show IPoA configuration
`lan`	dhcpclient	- set dhcp client configuration
	dhcpserver	- set dhcp server configuration
	fullduplex	- fullduplex <Disable> | <Enable>
	setdhcp	- set dhcp operation
	setip	- setup the IP address, and subnet mask for Ethernet connection
	show	- show LAN configuration
`pat`	addpatin	- add incoming PAT table
	delpatin	- delete incoming PAT table
	setpat	- enable or disable PAT function
	show	- show PAT configuration
`pppoa`	adduser	- add user ID and password
	chpass	- change user password
	deluser	- delete user
	echo	- set echo interval time
	setllc	- add LLC header on the packets
	setqos	- set class
	show	- show PPPoA configuration
`rl483`	delwanip	- delete VPI and VCI
	setqos	- set class
	setwanip	- set PVC and Wan IP for routing mode
	show	- show RFC1483 configuration

Table 3-2. Additional main-menu and second-level routing commands (continued)

Main menu	Second-level menus/description
rtable	addiproute - add routing table deliproute - delete routing table show - show routing table

Configuring a 20 Series CellPipe

4

This chapter provides general information for configuration of the various interfaces and procedures for administering a CellPipe 20 Series unit.

Auto-provisioning

All CellPipe 20 Series units support the Lucent TURN-UP automated CPE provisioning system. TURN-UP eliminates the need for user configuration of units and provides centralized management of configuration information.

When you power up the unit, it is set to default (factory settings) and the console will display the following message:

```
Starting to download from remote server...
```

This means TURN-UP is enabled and is downloading the latest configuration information.

To disable the feature, interrupt the download and manually configure the system.

To re-enable the feature, you need to select the `default` command and reinstall the factory default configuration.

Configuring WAN interface

Currently the 20 Series units support SDSL and ADSL WAN interfaces.

SDSL commands and configurations

The following is a list of the menus available under the `sdsl` command:

```
auto - <Enable>|<Fast>|<Scan>|<Disable> autobaud rate function
cell - <Enable>|<Disable> idle-cell header
dbit - configure the SDSL data bit as normal or reverse polarity
default - set SDSL configuration back to factory setting
enable - activate the last updated SDSL parameters
maxrate - configure the SDSL autobuad max rate
rate - manually configure the SDSL line rate
scramble - <Enable>|<Disable> payload scrambling
smbit - configure sign/magnitude bit sequence
status - display the configuration and status of current SDSL
setting
terminal - configure modem to COE or CPE mode
```

Select the `auto` command to set values for autobaud rate function.

```
>sdsl> auto <Enable>|<Fast>|<Scan>|<Disable>
        (Scan Rate: 2320, 1744, 1536, 1152, 768, 384, 192)
```

Select the `cell` command to enable or disable the idle-cell header.

```
>sdsl> cell <Enable|Disable>
```

Select the `dbit` command to configure the sdsl data bit.

```
>sdsl> dbit <Normal|Reverse>
```

Select the `default` command to set the SDSL configuration back to factory setting.

```
>sdsl> default
Set SDSL configuration back to factory setting
```

Select the `enable` command to activate the last updated SDSL parameters.

```
>sdsl> <enable > (null)
```

Select the `rate` command to manually configure the SDSL line rate.

```
>sdsl> rate - <n*8> (144 <= (n*8) <= 2320)
```

Select the `maxrate` command to configure the maximum SDSL autobaud rate. For example:

```
>sdsl> maxrate

maxrate   - configure the sdsl autobaud max rate
can use
2320K 1568K 1552K 1536K 1168K 1152K 1040K 784K
768K 528K 416K 400K 384K 272K 208K 192K
160K 144K
```

Select the `rate` command to manually configure the SDSL line rate. For example:

```
>sdsl> rate

rate      - configure the sdsl line rate
can use
2320K 1568K 1552K 1536K 1168K 1152K 1040K 784K
768K 528K 416K 400K 384K 272K 208K 192K
160K 144K
```

Select the `scramble` command to enable or disable payload scrambling.

```
>sdsl> scramble <Enable>|<Disable>
```

Select the `smbit` command to configure sign and magnitude bit sequence.

```
>sdsl> smbit <Normal|Reverse>
```

Select the `status` command to display the configuration and status of the current SDSL setting. For example:

```
>sdsl> status
>version : Ver 2.31 Date 19/Feb/2001
terminal        - cpe
auto            - enable
rate            - 2320
maxrate         - 2320
smbit           - reverse
dbit            - normal
scramble        - enabled
cell            - disabled


Status :
Bitpump F/W Version : 5.1
Bitpump : present
CO/RT Select : cpe
Auto Rate : enable
Current Rate : 272
Max Rate : 2320
Sign/Magnitude Bit Sequence : reverse
Data Bit Polarity : normal
DSL Status : during startup
Line Quality : -16.0
Attenuation : 31.5
```

Select the `terminal` command to configure the modem to COE or CPE mode.

```
>sdsl> terminal <Coe>|<CPe>
```

ADSL commands and configurations

The following is a list of the menus available under the `adsl` command:

abort   - abort ADSL line

bitdn   - ADSL downstream bit loading value

bitup   - ADSL upstream bit loading value

coding	- <0>|<1>|<2>|<3>|<4>|<5>|<6>|<Auto> dB - coding gain
counts	- display ADSL counters
default	- reset to default ADSL setting
ec_fdm	- <Ec>|<Fdm> - set EC or FDM mode
rx_bin	- <start_bin> <end_bin>
show	- display ADSL parameter configuration
startup	- restart ADSL line
status	- display ADSL line status
stnl	- <T1.413>|<g.Lite>|<g.Dmt>|<Multi Mode>
trellis	- <Enable>|<Disable> - Trellis encoding
tx_pwr	- <0> .. <12> dB - Tx power attenuation
tx_bin	- <start_bin> <end_bin>

Select the abort command to abort the ADSL connection.

```
>adsl> abort
Abort ADSL connection
```

Select the bitdn command to obtain the downstream bit loading value.

```
>adsl> bitdn
```

Select the bitup command to obtain the upstream bit loading value.

```
>adsl> bitup
```

Select the coding command to set the ADSL coding gain:

```
>adsl> coding - <0>|<1>|<2>|<3>|<4>|<5>|<6>|<Auto> dB - coding
gain
```

Select the default command to set the ADSL configuration back to factory setting.

```
>adsl> default
Set ADSL configuration back to factory setting
```

Select the ec_fdm command to configure the ADSL link for echo cancellation or frequency division multiplexing (FDM).

```
>adsl> ec_fdm <Ec>|<Fdm>
```

Select the rx_bin command to limit the bin number used for special configurations in the receive signal. Values for bin numbers are between 1 to 255.

```
>adsl> rx_bin - <start_bin> <end_bin>
```

Select the show command to display the ADSL parameter configuration. For example:

```
>adsl> show
```

ADSL setting:	Current	Ineffective
Local line code	MULTIMODE	MULTIMODE
Trellis encoding	Enabled	Enabled
EC/FDM mode	FDM	FDM
Coding gain	AUTO	2 dB
Transmit Power Attenuation	0 dB	0 dB
Tx Start bin	6 (H)	6 (H)
Tx End bin	1f (H)	1f (H)
Rx Start bin	20 (H)	3 (H)
Rx End bin	ff (H)	4 (H)

Select the startup command to restart the ADSL connection.

```
>adsl> startup

start to re-Sync. ...
```

Select the status command to display the ADSL parameter configuration. For example:

```
>adsl> status

ADSL Firmware version    ANNEX_A CPE 41000

OP state                 handshake

Last Failed Status        (0)

Start Progress           a0

Watchdog Timer           53


Line code                G.DMT
Framing_Overhead_actual  0
Trellis                  <disable>
AS0_Dn_Bytes_Actual      0
```

```
AS0_Dn_Latency_Actual      <interleave>
LS0_Up_Bytes_Actual        0
LS0_Up_Latency_Actual      <interleave>
Fast_R_Up_Actual           0
Interleave_S_Up_Actual     0
Interleave_D_Up_Actual     0
Interleave_R_Up_Actual     0
Fast_R_Dn_Actual           0
Interleave_S_Dn_Actual     0
Interleave_D_Dn_Actual     0
Interleave_R_Dn_Actual     0
```

Select the stnl command to configure the local ADSL coding type.

```
>adsl> stnl - <T1.413>|<g.Lite>|<g.Dmt>|<Multi-Mode>
```

Select the trellis command to enable or disable Trellis encoding.

```
>adsl> trellis <Enable>|<Disable>
```

Select the tx_pwr command to configure the transmitted power attentuation for a range between 0 dB and 12 dB.

```
>adsl> tx_pwr <0> .. <12>
```

Select the tx_bin command to allow the user to limit bins used for special configuration in the transmitted signal.

```
> adsl> tx_bin - <start_bin> <end_bin>
```

Configuring LAN interface

This section provides menus for configuring the LAN interface in both bridging and routing mode.

Configuring LAN interface in bridging mode

The following is a list of the menus available under the lan command in bridging mode:

```
fullduplex    - fullduplex <Disable>|<Enable>
setip         - setup the IP address, and subnet mask for
                Ethernet connection
show          - show LAN configuration
```

Select the fullduplex command to enable or disable fullduplex.

>lan> **fullduplex <Disable>|<Enable>**

Select the setip command to set up the IP address and subnet mask for the LAN link. For example:

>lan> **setip 192.168.2.32**

```
Set a new IP address = 192.168.2.32 and
Subnet mask is default = 255.255.255.0
```

Select the show command to display the current configuration of IP setting. For example:

>lan> **show**

```
Ethernet IP = 192.168.2.32 and
Subnet mask is default = 255.255.255.0
FullDuplex : Disable
```

Configuring LAN interface in routing mode

The following is a list of the menus available under the lan command in routing mode:

```
dhcpclient    - set dhcp client configuration
dhcpserver    - set dhcp server configuration
fullduplex    - fullduplex <Disable>|<Enable>
setdhcp       - set dhcp operation
setip         - setup the IP address, and subnet mask for
                Ethernet connection
show          - show LAN configuration
```

Select the dhcpclient command to set up the dhcp client configuration.

>lan> **dhcpclient <lease time>**

Select the dhcpserver command to configure the range of IP addresses that are associated with the subnet mask used for the DHCP server.

```
>lan> dhcpserver <range1 startIP> <range1 endIP> [<range2
        startIP> <range2 endIP>] [<max-lease-time>]
        - dhcpserver dns <dns ip1> [<dns ip2>]
```

Select the setdhcp command to set the DHCP mode of the unit.

```
>lan> setdhcp <server|client|disable>
```

Select the setip command to set the the IP address and subnet mask for the link.

```
>lan> setip <etherip[/<masknum>] [subnet mask]>|<dhcp>
```

Select the show command to display the LAN configuration. For example:

```
>lan> show
Ethernet ip: 149.198.65.46
Subnet mask: 255.255.255.0
FullDuplex:Enable


DHCP current setting : disable.
DHCP ineffective setting : disable.
```

Configuring the manage command

The manage command allows you to set the user password. When user enables a password, the unit will time out after 10 minutes if there is no activity. The password has to be re-entered to resume activity.

```
>manage> setpass
Password disabled
New Password:<password>
```

Configuring the mode command

The mode command allows you to select for either the bridging or the routing mode of operation.

```
>>mode
Please select bridge or router:(b/r,r) <b|r>
```

Configuring the quick command

The quick command allows you to easily configure your LAN connections in either the bridging or routing mode.

The quick command in bridging mode

The quick command in bridging mode allows you to easily configure eight PVCs. For example:

```
>> quick
1 PVC existed, 7 PVCs available.


VPI(0-1023):8
VCI (0-65535):33
Packet Filter (Any/Ip/Pppoe): any
Add another PVC ? (y/n): n
Enable Spanning tree? (y/n) : y
```

The quick command in routing mode

The quick command in routing mode allows you to select the connection protocol and set up the appropriate PVCs. For example:

```
>> quick
R1483(r)/ IPoA(i)/ PPPoA(p): r1483
0 PVC existed, 8 PVCs available.
Ethernet IP (149.198.65.46) :
Subnet mask (255.255.255.0) :
VPI(0-1023): 5
VCI(1-65535): 32
WAN IP : 149.198.6.46
Add another PVC ? (y/n): n
```

```
>>quick

R1483(r)/ IPoA(i)/ PPPoA(p): ipoa

0 PVC existed, 8 PVCs available.

Ethernet IP (149.198.65.46) :
Subnet mask (255.255.255.0) :
VPI(0-1023): 5
VCI(1-65535): 33
WAN IP : 148.198.6.46
Gateway : 148.198.6.90


>>quick

R1483(r)/ IPoA(i)/ PPPoA(p): pppoa

0 PVC existed, 1 PVC available.

Ethernet IP (149.198.65.46) :
Subnet mask (255.255.255.0) :
VPI(0-1023): 5
VCI(1-65535): 34
Authentication( PAP(p)/CHAP(c)/None(n) ): p
User name: Lucent
Password: *******
Retype password: *******
```

Configuring the r1483 command

You can configure the r1483 command for either bridging or routing mode.

The r1483 command in bridging mode

The following is a list of menus under the r1483 command in the bridging mode:

```
delpvc        - delete VPI and VCI
pfilter       - set packet filter type
setpvc        - set VPI and VCI for bridge mode
setqos        - set class
```

```
setspan       - <Enable>|<Disable> spanning tree
show          - show RFC1483 configuration
```

Select the `delpvc` command to delete one or all PVCs.

`>r1483>` **`delpvc <all>|[<vpi>/]<vci>`**

Select the `pfilter` command to set the packet filter type.

`>r1483>` **`pfilter [<vpi>/]<vci> <any|ip|pppoe|igmp|none>`**

Select the `setpvc` command to set the PVCs in bridging mode.

`>r1483>` **`setpvc [<vpi>/]<vci> [llc/vcmux]`**

Select the `setqos` command to set the class for quality of service.

`>r1483>` **`setqos [<vpi>/]<vci> <ubr|cbr|vbr(nrt)>`**

Select the `show` command to display the RFC1483 configuration.

```
FUNCTION   VPI/VCI    CLASS    LLC/VCMUX   Spanning   Pkt Filter
Rfc1483    8/35       ubr      LLC         Enable     ANY
```

The r1483 command in routing mode

The following is a list of menus under the `r1483` command in the routing mode:

```
delwanip  - delete VPI and VCI
setqos    - set class
setrip    - set RIP configuration
setwanip  - set PVC and Wan IP for routing mode
show      - show RFC1483 configuration
```

Select the `delwanip` command to delete one or all PVCs.

`>r1483>` **`delpvc <all>|[<vpi>/]<vci>`**

Select the `setqos` command to set the class for quality of service.

`>r1483>` **`setqos [<vpi>/]<vci> <ubr|cbr|vbr(nrt)>`**

Select the `setrip` command to set the PVC for RIP.

`>ipoa>` **`setrip [<vpi>/]<vci> <1|2|1&2|0>`**

Select the setwanip command to set PVC and the IP address for routing.

```
>r1483> setwanip [<vpi>/]<vci> <wanip[/<masknum>]>
```

Select the show command to display the RFC1483 configuration.

```
> r1483> show
RFC1483 setting:
FUNCTION  VPI/VCI    CLASS  Wan IP/MaskNum
```

Configuring the dnsrelay command

The following is a list of menus available under the dnsrelay command:

```
setdnsip        - set DNS Server IP
show            - show DNS Relay configuration
```

Select the setdnsip command to set the IP address of the DNS server.

```
>dnsrelay> setdnsip <dnsip> [<retry times>]
```

Select the show command to display the DNS Relay configuration.

```
>dnsrelay> show
DNS server ip: 192.168.2.65
Retry times: 3
DNS relay status
```

Configuring the ipoa command

The following is a list of menus available under the ipoa command>

```
delwanip    - delete IPoA PVC
setqos      - set class
setrip      - set IPoA PVC
setwanip    - set IPoA PVC
show        - show IPoA configuration
```

Select the delwanip command to delete one or all (8) IPoA PVCs.

```
>ipoa> delpvc <all>|[<vpi>/]<vci>
```

Select the setqos command to set the class for quality of service.

```
>ipoa> setqos [<vpi>/]<vci> <ubr|cbr|vbr(nrt)>
```

Select the setrip command to set the PVC for RIP.

```
>ipoa> setrip [<vpi>/]<vci> <1|2|1&2|0>
```

Select the setwanip command to set up to eight PVCs, the WAN IP addresses for each PVC, and the gateway IP address.

```
>ipoa> setwanip [<vpi>/]<vci> <wanip[/<masknum>]> <gatewayip>
```

Select the show command to display the IPoA configuration.

```
> ipoa> show
IPoA setting:
FUNCTION  VPI/VCI CLASS  Wan IP/MaskNum GatewayIP RIP
```

Configuring the pppoa command

The following is a list of the menus available under the pppoa command:

```
adduser        - add user ID and password
chpass         - change user password
deluser        - delete user
echo           - set echo interval time
setllc         - add LLC header on the packets
setqos         - set class
setrip         - set RIP configuration
show           - show PPPoA configuration
```

Select the adduser command to set up a PVC, user ID, and select an authentication protocol for a user.

```
>pppoa> adduser [<vpi>/]<vci> <userid> [<chap|pap>]
```

Select the chpass command to change the password for the user of a pppoa connection.

```
>pppoa> chpass
Old Password:******
New Password:******
```

```
Confirm Password again: ******
Pass has been changed
```

Select the deluser command to delete a user of a pppoa connection.

```
>pppoa> deluser
```

Select the echo command to input the echo time interval and enable LCP echo cancellation.

```
>pppoa> echo <interval time>
```

Select the setllc command to enable or disable logic link control (LLC).

```
>pppoa> setllc <e>nable|<d>isable
```

Select the setqos command to set the class for quality of service.

```
>pppoa> setqos [<vpi>/]<vci> <ubr|cbr>
```

Select the setrip command to set up for RIP.

```
>pppoa> setrip <1|2|1&2|0>
```

Select the show command to display the PPPoA routing setting.

```
>pppoa> show
PPPoA dial out setting:
Function    VPI/VCI   Class    PCR (Kbits)     UserID/Auth
PPPoA        2/32      ubr       640              Lucent/CHAP


LLC = Disable        Echo interval time: 60 s
```

Configuring the pat command

The following is a list of the menus available under the pat command:

```
addpatin      - add incoming PAT table
delpatin      - delete incoming PAT table
setpat        - enable or disable PAT function
show          - show PAT configuration
```

Select the addpatin command to enable a local server's IP address to be used as a WAN access port.

```
>pat> addpatin <pppoa|wanip> <port>/<udp|tcp> <serverip>
```

Note: Prior to setting the local server as a WAN access port, you have to enable the PAT function. See the setpat command below.

Select the delpatin command to disable the local server as a WAN access port.

```
>pat> delpatin <all>|<number>
```

Select the setpat command to enable or disable a specific PAT interface.

```
>pat> setpat <pppoa|wanip> <e>nable|<d>isable
```

Select the show command to display the Pat configuration.

```
>pat> show
PAT enabled interface:
Interface IP address
IPoA 210.62.2.195
PPPoA?.?.?.?

PAT incoming table
No.  i/f name|WAN IP      Port/Protocol      Server IP
1     pppoa                434/udp            192.62.2.134
2     210.62.2.195         232/tcp            192.62.2.166
```

Upgrading System Software

5

Preparing to upgrade

To upgrade system software for a CellPipe 20 Series unit, you need to download to your computer the appropriate zipped file of the latest software release. Establish a serial connection between the unit and your computer for access to the CLI and also establish an Ethernet connection to the unit. Be sure the unit and your computer are configured properly so that you can successfully "ping" the unit from your computer or vice versa.

Obtaining software

You can obtain the latest software release from the Lucent Technologies eSight™ Service Center at `http://www.esight.com`.

Note: Be sure you use the correct loads to upgrade. Your unit can lose all or part of its configuration if the wrong loads are used.

⚠ **Caution:** Do not upgrade to an earlier software version. Newer units will not function properly when older software is loaded.

Upgrading software

Follow the procedure below to upgrade software:

1   Extract the loads from eSight to your computer.

2   Establish an Ethernet connection between the unit and your computer.

3   Set up IP addresses on the unit and your computer such that you can successfully ping the unit.

4   Under the DOS prompt on your computer, enter the path to the directory containing the extracted loads and a file named xupgrade.bat.

5   To start the upgrade, execute command `xupgrade <ipaddress of unit>`, for example:

C:\> **xupgrade 149.198.65.46**

Note: There is no need to back up your current configuration. Using the xupgrade.bat file for upgrading will retain your current configuration. The upgrading process might last as long as 60 seconds.

6   Then enter the `restart` command to reboot the unit.

7   Lastly enter the `save` command to save the new upgrade.

Note: Maintain stable power to the unit while upgrading software. If power fails during the upgrading process, contents in the memory could be destroyed and the system will hang and no longer function.

Warranties and FCC Regulations

<div style="text-align: right; font-size: 2em; font-weight: bold;">A</div>

Product warranty

1 Lucent Technologies warrants that the CellPipe unit will be free from defects in material and workmanship for a period of twelve (12) months from date of shipment.

2 Lucent Technologies shall incur no liability under this warranty if:

– The allegedly defective goods are not returned prepaid to Lucent Technologies within thirty (30) days of the discovery of the alleged defect and in accordance with Lucent Technologies' repair procedures; or

– Lucent Technologies' tests disclose that the alleged defect is not due to defects in material or workmanship.

3 Lucent Technologies' liability shall be limited to either repair or replacement of the defective goods, at Lucent Technologies' option.

4 Lucent Technologies MAKES NO EXPRESS OR IMPLIED WARRANTIES REGARDING THE QUALITY, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE BEYOND THOSE THAT APPEAR IN THE APPLICABLE Lucent Technologies USER'S DOCUMENTATION. Lucent Technologies SHALL NOT BE RESPONSIBLE FOR CONSEQUENTIAL, INCIDENTAL, OR PUNITIVE DAMAGE, INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR DAMAGES TO BUSINESS OR

BUSINESS RELATIONS. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES.

Warranty repair

1 During the first three (3) months of ownership, Lucent Technologies will repair or replace a defective product covered under warranty within twenty-four (24) hours of receipt of the product. During the fourth (4th) through twelfth (12th) months of ownership, Lucent Technologies will repair or replace a defective product covered under warranty within ten (10) days of receipt of the product. The warranty period for the replaced product shall be ninety (90) days or the remainder of the warranty period of the original unit, whichever is greater. Lucent Technologies will ship surface freight. Expedited freight is at customer's expense.

2 The customer must return the defective product to Lucent Technologies within fourteen (14) days after the request for replacement. If the defective product is not returned within this time period, Lucent Technologies will bill the customer for the product at list price.

Out-of warranty repair

Lucent Technologies will either repair or, at its option, replace a defective product not covered under warranty within ten (10) working days of its receipt. Repair charges are available from the Repair Facility upon request. The warranty on a serviced product is thirty (30) days measured from date of service. Out-of-warranty repair charges are based upon the prices in effect at the time of return.

FCC Part 15 Notice

⚠ **Warning:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is unlikely to cause harmful

interference. But if it does, the user will be required to correct the interference at his or her own expense.

The authority to operate this equipment is conditioned by the requirement that no modifications will be made to the equipment unless the changes or modifications are expressly approved by Lucent Technologies.

IC CS-03 Notice

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee that the equipment will operate to the user's satisfaction.

Before installing this equipment, users should make sure that it is permissible to be connected to the facilities of the local telecommunications company. An acceptable method of connection must be used to install the equipment. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Warning: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.